

**Paper presented at the Greening of Industry Network Conference
Rome**
Partnership and Leadership
Building Alliances for a Sustainable Future
November 15-18, 1998

Sustainable Business: Learning and Action Networks in Strategy and Implementation

Sarah Clarke
Schulich School of Business
York University
4700 Keele Street
North York , M3J 1P3
Ontario

Tel: +65 440 1585
Fax: +65 348 0664
e-mail: SaraClarke@aol.com

Professor Nigel Roome
Tilburg University
PO Box 90153
500 LE Tilburg
The Netherlands

Tel: +31 134 662 337
Fax: +31 134 662 875
e-mail: nigel.roome@kub.nl

ABSTRACT

This paper develops the notion that sustainable development is a process based on a complex set of organizational and social projects that are based on continuous learning, action and negotiated change. Process of this kind are brought about through networks that span business organizations and other stakeholders in society. The paper presents a case study of a Canadian company that is acknowledged as a leader in the field of environmental management. It outlines how the company responded to the agenda of environmental management and the demands for more sustainable practices. It describes how the company's strategic planning process identified and responded to these issues; how its approach has been defined and redefined; and the way that the organization's processes and

approach have been influenced by its willingness to learn and work with a network of stakeholders.

The paper establishes sustainable development as a strategic issue for business involving deep organizational change. It identifies a critical role for action-learning networks in the transition to more sustainable business organizations as part of the move towards sustainable systems of production and consumption.

Introduction

Business has responded to the agenda for environment management, and the broader agenda of sustainable development, in a variety of ways, from superficial legal compliance through more sophisticated environmental management systems and on to strategically led processes of organizational change and reorientation. The ideas underscoring these approaches are well documented (Hall & Roome 1996; Hart 1997). The agenda for sustainable development is broader. It involves business in a strategically-led process of continuous transformation which is informed by a clear set of principles¹. This change can be viewed as a multi-actor, multi-level project designed to transform not only the company (including its organization, technologies, products and services) but, also, the many actors and stakeholders in the company's institutional and social field. Sustainable development should therefore be conceived as a complex set of organizational and social projects (experiments) that are designed to contribute to sustainable patterns of production and consumption (Roome, 1998).

Few companies have stated a commitment to embark on this type of change. Even fewer have been the subject of research. There are 'snap-shot' accounts of companies such as Monsanto (Hart, 1997; Magretta, 1997) but there are few longitudinal, real time studies which address the successes and failures in bringing about sustainable development through joint organizational and social projects. The exception is the work of the present authors on Ontario Hydro (Roome & Clarke, 1994; Roome & Bergin, 1996). The contention of this work is that change, to integrate environmental ideas into business or to progress sustainable development, is brought about through a complex process of negotiation, learning and action.

¹ A distinction is made here between environmental management and management for sustainable development. Environmental management refers the policies and practices, largely within a utilitarian ethical frame of reference, which direct an organization towards product stewardship, bring environmental values into economic analysis and allow for the emergence of new relationships across the supply chain. Management for sustainable development involves policies and practices underpinned by principles of justice, respect, equity, stewardship, precaution and futurity (Roome, 1995) which fundamentally question and reshape an organization's environmental, social,

This involves networks that span the company and its internal and external stakeholders (Clarke & Roome, 1995; Clarke 1997; Roome, 1997). These networks provide a meta-textual² frame within which companies learn and act, together with different stakeholders, to shape organizational, social and technological responses to the agenda for environment and business or for sustainable development.

The networks that are available to a company reflect characteristics of its industry, technologies, organization, personnel, culture and history. Networks are dynamic, fluid structures which contain a diverse array of values, experiences, interests and ideas, within which a myriad of contested interpretations of environmental and sustainable development concepts are played, and acted, out (Myerson & Rydin, 1996; Clarke, 1997; Roome 1997).

This paper examines the way in which a Canadian publicly listed utility, known here as SysTec³, utilized these networks of learning and action in concert with its process of strategic decision making to develop its environmental and sustainable development thinking and practice. The paper analyses the characteristics of SysTec's approach and its ability to identify and act on elements of the environmental and sustainable development agenda. The conclusion outlines the implications of the findings for the development of more sustainable management practice.

The case study forms part of a large grounded theory study of the move towards more sustainable technology management in companies in Canada and the UK, undertaken between Fall 1993 and Spring 1995 (Clarke, forthcoming). The current paper draws on

economic and political relationships and which enable the equitable redistribution of wealth and opportunity within and between generations and societies (Clarke, 1998).

² The idea of a meta-textual frame or network combines two distinct lines of thinking. It follows from the Nonaka & Takeuchi (1995) notion that knowledge is created in companies through highly networked or hypertext structures. Hypertext organizations can apply this knowledge to develop competitive competence. However, sustainable development is a meta-problem, a problem which can not be resolved by any one organization working alone. Meta-textual networks provide the integrating frame out of which knowledge about society's economic, environmental and social needs is developed. These networks gives rise to opportunities for actions so knowledge-based companies can develop innovative technological solutions to those needs, and, they provide the basis for the institutional mechanisms to bring about social and organizational innovation (Roome, 1997).

interviews with over 35 members of SysTec's network of learning. It includes senior managers, environmental specialists and engineers, within SysTec, as well as members of SysTec's wider, external network, who were identified by SysTec personnel as influential in the changes taking place in the company. The study method used a 'snow-balling' technique (Jorgensen, 1989) to develop a picture of the members of the network of learning and action. Interviewees were asked to identify other individuals who were influential in shaping the ideas and action that influenced the company's strategy, environmental performance and practices and technology (Clarke, 1997). The study also draws on documentation available in the public domain.

A Case study of SysTec

The case study describes SysTec and addresses the role played by meta-textual networks in the company's strategic management processes and environmental initiatives. It is divided into three sections. The first describes the characteristics of SysTec's business and business context. The next sets out SysTec's approach to strategic management and how the company's environmental thinking and practice became interwoven with this process and the key role of networks. The third reviews SysTec's evolving response to the environment and sustainable development agendas.

³ SysTec is used to ensure the anonymity offered to respondent's.

1 SysTec's business context and strategic orientation

Founded over 150 years ago, SysTec's business is in the distribution of a non-renewable resource. Within its operational (franchise) area, it is responsible for storing, transmitting, distribution, sales and supplies of this resource. It is a relatively small, Canadian company (3,000 employees) and relies heavily on externally contracted research and development.

SysTec is well known for its strong commitment to, and relationships with, the communities it serves. It has a 'culture' of individual responsibility set within an overall ethic of corporate citizenship (SysTec, 1993a). This core value underpins the actions of the company and the attitudes of its personnel. It is complemented by an organizational philosophy to be a "*role model for others*" (SysTec, 1993b) and a belief that it is "*part of the solution*" to more environmentally sustainable futures (SysTec, 1990a).

The industry in which SysTec operates is highly regulated. The regulator has significant influence over the direction of SysTec's business, what its rates are and how it distributes its profits. SysTec has to present its case to the regulator on an annual basis to justify its rates against its program of activities. The regulator places strict demands on the corporation's environmental initiatives and research programs. The company is often required to enhance its environmental programs to satisfy the regulator, who weighs SysTec's business case against the general needs of the community and specific environmental interests. The regulatory regime means that any action, by other companies in SysTec's franchised area, to vary their rates, community practices or environmental interests may set precedents that have implications for SysTec's operations.

In its sector, SysTec enjoys a cooperative relationship with other companies that supply the same resource. There is a willingness to share ideas, particularly in relation to environmental concerns. This occurs informally through one-on-one contacts and formally

through research partnerships, industry association initiatives and community wide projects. Relationships with competitor companies, which supply substitute non-renewable resources in SysTec's franchise area, are less harmonious.

Despite its relatively small size, SysTec is acknowledged by many observers as a leader in environmental issues. It has not purposefully sought this leadership position for which it is acclaimed, yet, companies look to SysTec for advice and leadership in environmental matters.

2 Strategic planning, meta-textual networks, environment and sustainable development

Prior to 1989, SysTec's environmental activities centered on a loose set of initiatives required by legislation and regulation, voluntary initiatives spawned from the interests of individual employees, such as waste management and office recycling, as well as general 'housekeeping' initiatives and programs designed to improve operational efficiencies. During the late 1980s, SysTec encountered rising concern about environmental issues and demands for environmentally sound corporate behavior, both from the general public and its regulators. These concerns included the public awareness of environmental concerns provoked by the Montreal Protocol and the issue of global climate change as well as the issue of resource and product stewardship. These external pressures were supported by a pull from within the company, as employees sought to make a contribution to environmental improvement, consistent with the company's social responsibility ethic.

These factors prompted SysTec to seek a more comprehensive approach to environmental concerns. In 1989 an Environmental Strategy Committee (ESC) was formed (comprising senior managers from across the company including the environment department). And a process of organizational change was begun which culminated in an Environmental Management System (EMS). By 1994, the EMS was an integral part of the company's strategic decision making processes. Throughout this period of rapid change

SysTec's overall environmental approach was characterized by four principles: it was low key; it lead by example; it worked with stakeholders; and its approach was strategic in orientation.

The company adopted a 'low key' approach to its environmental initiatives. It did not actively seek highly visible recognition of its environmental programs or contributions to community projects. For example, one environmental manager noted:

"I think because we're regulated we can't throw gobs of money at it [community projects]. Our level of sponsorship is basically \$5,000 or less.....And basically our demands for recognition are usually low key and subtle.....There is a recognition [in the Environmental Services Department] that we try to do the right thing for its own value, not necessarily because we see it as part of a larger marketing strategy.....We don't necessarily need to be broadcast to everyone as saviors of the world. " (SysTec Interview III).

SysTec believed that it had a responsibility to be part of the solution to society's environmental problems. Consequently, the company 'leads by example', by putting its own house in order (SysTec, 1994b:1) and by acting on national and international environmental initiatives, such as those on climate change. The rationale behind this approach is that:

"If you say that you are part of the environmental solution.....that implies an obligation thatyour own operations will be beyond reproach. But to me it also implies an obligation that you will also help develop what is a solution to the concerns before [you] and you can't do that alone, you have to do that as part of a larger society." (SysTec, Interview III).

Partnerships and stakeholder involvement form a significant aspect of SysTec's environmental philosophy. More than this, the company emphasized the need for communication mechanisms between stakeholder groups and the importance of education about environmental issues for their employees and for the general public. In particular, SysTec seeks to understand the alternative perspectives of different stakeholders rather than seeking to influence or dominate opinion. It uses insights from its interactions with different stakeholder groups to review and improve the company's environmental programs and activities:

".....[when] we develop partnerships [we develop] the ability to be able to sit down and listen to these people and get a better understanding of what their interest is, their perspective and, in terms of a company doing its strategic planning, how it should approach the environmental issues, that kind of grass roots polling as it were, building trust....." (SysTec, Interview III).

SysTec's process of strategic planning and decision making is also key to SysTec's success in responding quickly and innovatively to changing circumstances in the business environment. It enabled the company to identify key issues in the business environment, such as specific environmental concerns, to assess their implications for the company, and, to initiate and implement programs that responded to those new issues. It supports the changes the company has made in its environmental activities in a relatively short time. SysTec's strategic management process also contributes to the 'continuous improvement' of its environmental programs, through the identification of new environmental concerns, the implementation of new environmental activities and the revision of existing approaches.

The overall strategic planning process is designed to identify factors in the business environment that will shape the company's activities in the coming year. These factors are described by senior management as "*key strategic drivers*" (SysTec, Interview I). SysTec's strategic planning process predates the emergence of environment and sustainable development on its corporate agenda. However, since 1989, successive 'environmental' components have been identified by the planning cycle. Part of the response to these issues was to integrate the company's EMS and the Due Diligence Program (DDP)⁴ into the planning process.

A diagrammatic representation of the stages in SysTec's annual strategic planning process is shown in Figure 1. It outlines the process as it operated in 1994 and as described by interviewees. It shows how environmental management processes are integral to the business planning cycle through the linkages between the EMS and DDP to the overall

⁴ SysTec is required by law to demonstrate "Due Diligence" in respect of its environmental impacts.

process.

[INSERT FIGURE 1 ABOUT HERE]

In practical terms, all departmental directors are required to produce a "*scan of the business environment [context]*" to identify issues which are of strategic importance to their department. Directors discuss their business scans formally in the company's Strategic Planning Working Group (SPWG) and informally through their day to day operational relationships. This process ensures that each department is fully aware of the issues identified by other departments. It provides each departmental head with a complete range of factors arising in the business context for them to assess, not just those factors specific to their department. Consequently, environmental issues can be identified as critical business concerns by several departments.

Individual business scans are reviewed by a team of Vice Presidents (VP) and senior managers in the Strategic Planning Committee (SPC) which is the committee that decides which strategic drivers will guide the company's activities for the year.

Responsibility for the DDP process begins with a Due Diligence Task Force (DDTF), drawn from managers across the company. It looks at all aspects of the company's operations and areas of potential environmental risk, to determine whether or not SysTec's existing procedures are adequate and to suggest avenues for improvement. An aim is also to keep abreast of what is going on in the industry as a whole, "*not necessarily to be ahead of the pack, but certainly that [they've] got a plan in place to handle it, just in case something happens*" (SysTec Interview II). The due diligence exercise takes place before the business planning cycle begins. In this way departments can:

"[R]ead it, assimilate it, ask questions and then sit down to decide OK what should I and my department be doing in terms of cost effectiveness, productivity, environmental protection, customer service?" (SysTec, Interview III).

Consequently, the DDP ensures that environmental risks are continuously assessed

and integrated into the business planning cycle, even when environment does not emerge as a specific strategic driver.

The Environmental Planning and DDP loops shown in Figure 1 form the basis of the company's EMS. In this manner the strategic planning process envelops the company's EMS. Taken together the three management processes shown in Figure 1 facilitated the integration of environment into all levels of SysTec's decision making, from strategic to operational. As one environmental manager described it:

"[W]e try to use existing business planning procedures, so we don't reinvent the wheel, but we try to embellish and enhance the existing ones so that they have the environmental factor.....at the end of the strategic planning process[senior management] come up with the strategic themes that they think are important, [that] the business managers should think of. In the last few years environment has been one of those. Now it doesn't have to be there all the time.....But at least it gets fair weight. [The Environment Director] is very much involved in that process. So it's an opportunity to directly make presentations as to what environmental issues are before us, pressures, opportunities, threats that we should factor in." (SysTec, Interview III).

Once strategic drivers are established through this process, each business department brings forward its own business plans. These plans include details of environmental activities and are guided by the company's DDP. Members of the environment department compile the company's annual environmental plan from these business plan initiatives. They assist in program development and the monitoring and review of the company's environmental performance. The Environmental Director is responsible for reporting progress to a Special Committee of the Board of Directors, which subsequently reports to the full Board (SysTec, 1991c:13).

In terms of outcomes, environment emerged from the planning process, in 1991 and 1992, as one of the strategic drivers. It fell off the list of drivers in 1993, after the initial response to the 1991 and 1992 agenda had been "operationalized". This term was used by several interviewees to describe the process through which environment was embedded in the company's culture and operational activities. Although environment did not feature as a

driver in 1993, it was identified as a company performance measure. Consequently, departments began to include environmental performance in their business plans as a way to measure success in meeting SysTec's environmental commitments, as set out in the company's environmental policy and environmental principles. In 1994, environment re-emerged as a strategic issue under the umbrella of corporate responsibility and citizenship. Other strategic drivers during this period included: employee development, market share and growth targets and financial goals.

In 1994, the ESC established a set of environmental priorities for the company, ranging from low priority actions, such as waste management and environmental manuals, to high priority actions, for example environmental training and government and environmental partnerships. These action areas led to the development of an enhanced set of environmental performance objectives with targets and measures designed to ensure that the company continuously improves its environmental performance (SysTec, 1994.b:23-24).

3 SysTec's approach to sustainable development

SysTec's recent commitment to the environment is focused around the same values and goals that are provided by the ethic of corporate responsibility used to guide the company throughout its history. These values emphasize sensitivity to the needs of customers and employees, to the concerns of the local communities where it operates and, more recently, to the environmental implications of its business. The company acknowledges its responsibility to enhance shareholder value, but, sees this as only one of its goals (SysTec, 1991c:53). SysTec's environmental programs are influenced by the unique regulatory circumstance under which the company operates, with its expectation that the company will continue to promote new and improved approaches to environmental protection and management.

SysTec's environmental position is also shaped by the environmental impact of the

resource it supplies. This requires the company to be conscious of its health and safety responsibilities, particularly in regard to the need for efficient and safe use of the resource. SysTec, like other members of its industry, views its product as part of today's solution to society's search for a more sustainable future. The product is widely acknowledged to have significantly less environmental impacts than its commercially available substitutes. In company literature, SysTec promotes its resource as "*[N]ot perfect but a great step in the right direction*" (SysTec, 1990a) while acknowledging that "*[S]tewardship of the environment is everyone's responsibility*" (SysTec, 1991a). SysTec also sees itself as "*part of the solution*" to more environmentally sustainable futures (SysTec, 1990a).

SysTec was an early signatory to the International Chamber of Commerce's (ICC) Business Charter for Sustainable Development. According to SysTec: "*The Charter comprises sixteen principles for environmental management which, for business, are vitally important aspects of sustainable development*" (SysTec, 1994b:2). However, apart from this commitment, and a passing reference to sustainable development under the company's list of strategic priorities (SysTec, 1994b:23), there are no explicit references to sustainable development in the company's published documentation. SysTec does not define sustainable development or provide an explanation of its implications for the company. SysTec's approach was initially consistent with the emphasis in the ICC charter on the management of environmental effects and the notion that its overall business provides a bridge from an unsustainable past to a more sustainable future.

SysTec's environmental management approach has, however, become more sophisticated and increasingly consistent with the broader notion of sustainable development set out at the beginning of the paper. SysTec's early approach, demonstrated by its 1989 environmental policy (SysTec, 1994d), emphasizes a commitment to conduct operations in an environmentally sensitive manner, to promote employee and public awareness of

environmental issues, to promote the use of its product as the environmentally preferred choice, and, to develop technology to improve efficiency in resource utilization. By 1994 SysTec's had a Statement of Environmental Principles which reads:

"[SysTec] recognizes the intrinsic value of nature and is committed to conducting all of its operations in an environmentally responsible manner, with a view to protect and maintain the environment for future generations. This Statement of Environmental Principles guides the Company in achieving its commitment to environmental protection and citizenship. It is the obligation of every employee to understand their environmental responsibilities....." (SysTec, 1994c).

Although this document does not specifically reference sustainable development, the explicit recognition of the *"intrinsic value of nature"* and *"citizenship"* together with the company's commitment to environmental stewardship, partnership and learning with others suggests an understanding based on 'more than' environmental management, as conventionally conceived. It certainly represents a step beyond the company's earlier identification of itself as *"a responsible corporate guardian of a non-renewable resource"* (SysTec, 1991b).

Indeed the emphasis on the need to understand different stakeholder values, share ideas and work cooperatively with different groups, described in Section 2, implies an embedded understanding of the value for the company of engaging in relationships that bring about organizational and social learning and change.

Critical Characteristics of SysTec's Approach to More Sustainable Practices

The purpose of this part of the paper is to highlight some critical characteristics of SysTec's approach to environmental management and sustainable development. Table 1 highlights the major milestones attained by SysTec in its environmental management approach between 1989 and 1994. These identify both outcomes and the process of change which are linked to SysTec's capacity to learn how to be more sustainable. These changes can be categorized as: management structures and processes; communication activities; partnership and collaborative initiatives.

[INSERT TABLE 1 ABOUT HERE]

Management structures and processes

The management structures and processes used within SysTec to pick up environment as strategic drivers, which then adapted to incorporate those concerns, are described in detail in the earlier part of the paper. Internal to the company, the strategic planning process, EMS, and environmental committee structure ensure that all levels of personnel are involved in the development of environmental programs and the shaping of environmental thinking within the company. Complementing these processes a company wide training program, begun in 1994, aims to ensure that the company's environmental commitment is fully understood, and, roles and responsibilities are clearly identified. The company makes environmental information available through an in-house electronic bulletin board covering environmental issues, environmental displays and publications.

The case study suggests that SysTec's strategic process responded to the new environmental management and sustainable development agenda in a number of ways. These involved: problem identification - where environment was picked up as a strategic driver; operationalization - where environment was integrated into existing activities with new systems adopted and routinized, including additions to the strategic planning process itself; redefinition - where environment was dropped as a stand-alone, strategic driver but re-emerged as a linked issue under the umbrella of a new strategic driver 'Corporate Responsibility and Citizenship'. An important issue here is the ability of the strategic process to pick up the issues and to create the potential for integration.

This integration took place on a number of levels. First, strands of the 'environmental agenda' before 1989, such as waste and risk management, were integrated into a single strategic issue at the beginning of the 1990s and an overall organizational response was formulated. By the end of the case study, the newly fashioned strategic term 'environment'

was being recast and integrated as part of a wider issue connected to the company's relationship to society. This provides SysTec with the basis to move its conception of its environmental impacts and activities from environmental protection and management towards the broader notion of sustainable development. Second, SysTec also learned how to integrate these issues within its organizational structure and into the strategic planning and business planning processes that inform overall organizational change. Finally, the overall identity of the organization that links its culture, values and strategic process, technology and resource base was readily able to integrate these new ideas about environment and sustainable development. In particular, this is seen in the company's predisposition to communication and partnerships.

Communication activities

A critical element of SysTec's approach is its concern to communicate their perspective on the environment internally and externally, to share ideas with different stakeholders and gain an understanding of the views of others. As part of their commitment to educate the general public about environmental concerns, SysTec publishes educational leaflets on specific environmental issues which affect their company and industry in general, for example ozone depletion and global warming. These combined with public information sessions and displays and environmentally related community projects help to communicate the company's position and to raise awareness about environmental concerns.

The company also has a firm belief that being 'part of the solution' means that they must make sure all sides of an issue are given a voice. Consequently, various environmental interest groups meet with the company to discuss their concerns. The purpose of these meetings is not to give a "*Dog and Pony show*" where we would tell them how wonderful we were and what we were doing" (SysTec, Interview I). Rather, environmental activists are

invited to meet a number of departmental directors to discuss what their groups are planning to do, what their strategies are for the future and how they see the company's position. Before adopting this approach senior management, with the exception of environmental managers, had only met interest groups in adversarial settings, such as at regulatory hearings. The environmental managers for SysTec played a very important role in creating the settings and establishing the trust to enable representatives of these stakeholder groups and managers within SysTec to come together. One environmental manager said that of these meetings:

"It provides an opportunity for an outside group, not necessarily to see us as a black box but to see other places. It gives an opportunity for a lot of other people in.....[SysTec] to hear first hand what a group is, instead of having it distilled through me. It gives them a chance to raise their own questions as well....." (SysTec, Interview III).

This manager described it as a mutual learning process where each side was able to explain their position. Critically:

"There'd be areas where we agree to agree and areas where we agree to disagree and areas where we have opportunities to work together and areas where we need to work together towards resolving our differences."

These meetings also helped to destroy some of the stereotypes each side held about the other - the business community are portrayed as *"older men, with well pronounced bellies, smoking cigars"* and environmentalists are characterized as *"former hippies with torn blue jeans"* (SysTec, Interview III). One result of these meetings was that the company developed a better understanding of interest groups' expectations and a clearer picture of what other stakeholders believe SysTec should be doing if it is to be part of the solution to society's environmental problems. Moreover, SysTec gleaned important insights into the philosophy and tactics adopted by environmental groups.

These activities reinforce SysTec's commitment to environmental concerns and enable a wide range of perspectives and values to be incorporated into their response. This position is strengthened further by the company's emphasis on partnerships and collaborative

initiatives.

Partnerships and collaborative initiatives

SysTec is actively engaged in collaborative initiatives with its stakeholders, including the general public and interest groups, industry members and industry associations, research associations and universities, regulatory and governmental agencies and competitors. Their rationale for these partnerships is based on a realization that gone are the days of "*command and implement*" management styles (SysTec, Interview III). Increasingly, SysTec has had to find alternative ways to resolve issues. Through more inclusive styles of management, they have been able to gain a better understanding of the expectations of their customers, governments, regulators and special interest groups.

Aside from holding dialogue sessions with different interest groups, SysTec sponsors small environmental projects, such as the local zoo's 'adopt a pond program'. These initiatives complement the company's established involvement in community based activities in general. SysTec (1993b & 1994a) has also become an active supporter of Earth Day. It sees this event as a way to educate its employees and customers about SysTec's commitment to environmental protection.

Partnerships are key to SysTec's aim to promote the use of its product as the environmentally preferred choice and to develop new technology to support this goal. With a relatively small Technology and Development (T&D) Department focused on the development end of the 'Basic Research - Product Development' continuum, SysTec has no in-house, 'state of the art' research facility. Rather, it has developed the capability to leverage off external research organizations for its basic research needs. Part of T&D's activities are to change the products used by its customers. Where technology does not exist to fill a need, it encourages manufacturers to undertake technology development and, if the technological

base is missing, it promotes research to fill the gap. Consequently, SysTec is involved in a large number of research collaborations with local, national and international industry associations, research organizations and universities. These projects span a wide variety of issues from industry specific technological concerns about operational equipment and their environmental implications to more generic global environmental issues, such as climate change, involving basic research in, for example, atmospheric chemistry.

In this latter respect, SysTec is active in trying to persuade other industry players to have greater involvement in environmentally related projects that fall outside the industry's 'traditional' research areas. The company has spearheaded several industry association collaborative initiatives, such as a handbook of environmentally related, industry-wide research, an annual conference on environmental issues affecting the industry and environmental training. Moreover, SysTec is a key contributor to the formulation of environmental research policy at an industry level through its committee memberships. The company also seconded senior personnel to multi-stakeholder collaborative initiatives, for example a scheme to 'green' the city, where it is head-quartered, with this initiative involving representatives of environmental groups, engineering firms, government, management consultancies and business.

As a publicly listed company, in a highly regulated industry, SysTec has strong relationships with its regulators and governmental departments and agencies at municipal, provincial and national levels. It has been required by its regulator to take part in two collaborative initiatives, one to explore ways of internalizing environmental costs in the industry, the other to encourage demand-side management programs as a means to minimize environmental impacts. These initiatives have taken the form of multi-stakeholder consultative and collaborative groups that have forced competitors, environmental interest groups, consumer groups and governmental representatives to begin to address their

fundamental differences. This process compelled SysTec to rethink its approach to dealing with its stakeholders, most notably it learned that it cannot force either the nature of the process or the details of the agenda and its outcomes. One important issue encountered in this process involved building consensus around shared understandings, with environmental groups demanding greater, more radical, action than the participating companies are prepared to undertake.

Conclusions

A number of conclusions can be drawn from the case study of SysTec which speak about the capacity of business organizations to respond to the emerging agenda of environmental management and sustainable development. The acknowledged leadership of SysTec in environmental management can be traced to the context, business and established identity of the organization. In terms of context, the regulatory setting and the Canadian approach to multi-party dialogue creates a climate within which it is legitimate for businesses to take forward their environmental responsibilities. This is supported, rather than undermined, by the resources and technologies at the core of SysTec's business. These offered opportunities to position the company in terms of its, relative, environmental friendliness.

SysTec was able to build on this position by drawing on a number of internal organizational conditions that enabled it to learn rapidly and to undertake the changes necessary to build its environmental management capability and sustainable development potential. These include the values by which the company operates. It also includes the fact that SysTec had a strategic process in place that was able to identify environmental issues as a strategic issue: a process that was open, participative and flexible enough then to adapt itself to the organizational implications of those concerns. This strategic planning process can be described more like an organizational spiral, scooping up issues from across the

organization, than the more narrowly defined, planned, closed and hierarchical processes used by many organizations for strategic planning.

Moreover, this internal process fed on SysTec's increasingly close relationship not just to its customers but to its regulators and the communities in which it operates. It was further supported by SysTec's willingness to be open to others, to see communication as listening as well as talking, to engage in many different opportunities to learn and act with a wide range of stakeholders and to broaden their points of contact within the company. This meant that SysTec was able to make effective use of the rich network of learning and ideas with which it is connected. SysTec's environmental managers played an important role in bringing about a climate in which these learning opportunities have developed.

SysTec is therefore developing the basis of a meta-textual, systemic framework that provides a sounding board to reflect the company's commitment, through its internal strategic processes, to develop novel and experimental ways to meet the challenges in economy, environment and society it confronts. The networks that make up this framework provide feedback loops to enable SysTec continuously to re-define the problems of environment and sustainable development and to shape and reshape its responses to old and new issues. They also provide increasing opportunities for SysTec to act with others in society to undertake the system changes that are a hallmark of sustainable development.

Despite SysTec's acknowledged success in shaping its response to environment and sustainable development within its business a number of issues remain. The first of these concerns the extent to which SysTec is able to respond to the far reaching demands of stakeholders in its network, and, to develop collaborative initiatives and projects with them while respecting any fundamental differences of perspective that can not yet be bridged. Second, although SysTec is aware that it has to learn, act and negotiate with many different stakeholders, it has begun to encounter problems of understanding because of the contested

meaning and values associated with many of the ideas and language used by different actors in the network. These problems are beginning to influence the implementation of joint projects. Finally, there is evidence that SysTec's approach and activities are beginning to be imitated by other companies in SysTec's sector of the economy, its geographic region and its supply chain. However, these companies are imitating SysTec's programs and activities rather than undertaking the 'culture change' needed to adopt the organizational values, internal processes and relationships that are held in this paper to be key to SysTec's success.

Acknowledgment

The Authors would like to thank the Erivan K. Haub Program in Business and Environment, Schulich School of Business, York University, Canada for its financial support of this research. The accuracy of the content of this paper remains the responsibility of the authors.

References

Clarke, S. F. (1998) "Sustainable technology management: The role of networks of learning," In *Sustainability Strategies for Industry*, ed. N. Roome, Island Press, Washington, DC, USA.

Clarke, S. F. (forthcoming) *Unraveling networks of learning in the search for more sustainable technology management: an international study of organizational practice*. Doctoral Thesis, Schulich School of Business, York University Ontario, Canada.

Clarke, S. F. (1997) "Unraveling networks of learning in the search for more sustainable technology management," *Greening of Industry Network Conference*, Santa Barbara, CA, USA, November.

Clarke, S. F. & Roome, N. (1995) "Managing for environmentally sensitive technology: Networks for collaboration and learning," *Technology Assessment and Strategic Management*, 7, (2):191-215.

Hall, S. & Roome, N. (1996) "Strategic choices and sustainable strategies," In *The Greening of Industry Resource Guide and Bibliography*, ed. P. Groenewegen, K. Fischer, E. Jenkins, J. Schot, Island Press, Washington, DC, USA, pp 9-36.

Hart, S. (1997) "Beyond Greening: Strategies for a Sustainable World," *Harvard Business Review*, (January - February), pp 67-76.

Jorgensen, D. (1989) *Participant Observation: A Methodology for Human Studies*, Sage

Publications Inc., London, UK.

Magretta, J. (1997) "Growth Through Global Sustainability: An Interview with Monsanto CEO, Robert B. Shapiro", *Harvard Business Review*, (January - February), pp 79-88.

Myerson, G. & Rydin, Y. (1996) *The Language of Environment: A New Rhetoric*, UCL Press, London, UK.

Nonaka, I. & Takeuchi, H. (1995) *The Knowledge Creating Company*, Oxford University Press, Oxford, UK.

Roome, N. (1995) "Education for Sustainability: A Critical Assessment of the Contribution of Management Education to the Process of Learning to be Sustainable," *Greening of Industry Network Conference*, Toronto, Canada, November.

Roome, N. (1997) "The Role of Meaning, Communities of Knowing and Action Learning in the Integration of Business and the Environment - A Theory of Action Learning Networks," *Greening of Industry Network Conference*, Santa Barbara, CA, USA. November.

Roome, N. (1998) *Sustainability Strategies for Industry; The Future of Corporate Strategy*, Island Press, Washington DC, USA.

Roome, N. & Bergin, R. (1996) "Content, Process and Context: Strategies for Sustainability and Change," *Greening of Industry Network Conference*, Heidelberg, Germany, November.

Roome, N & Clarke, S. F. (1994) “Exploring the sustainable enterprise: A journey through theory and practice,” *Greening of Industry Network Conference*, Copenhagen, Denmark, November.

SysTec (1990a) Greenhouse Effect and Global Warming,. In Pamphlet Series [*Our Resource] and the Environment*, April.

SysTec (1991a) Corporate Leadership, In Pamphlet Series *Environmental Initiatives*, July.

SysTec (1991b) *Environmental Initiatives Pamphlet Series*.

SysTec (1991c), *Annual Report*.

SysTec (1993a), *Annual Report*.

SysTec (1993b), *Earth Day Annual Report*.

SysTec (1994a), *Earth Day Report*.

SysTec (1994b) *Environmental Plan*.

SysTec (1994c), *Statement of Environmental Principles*.

SysTec Interview I, 06/12/93

SysTec Interview II, 26/01/94

SysTec Interview III, 26/01/94

Table 1: Major Environmental Milestones at SysTec.

Period	Philosophy	Major Milestones
1989	Environmental Responsibility & Protection	<ul style="list-style-type: none"> • Environmental Strategy Committee formed. • Environmental Policy endorsed. • Annual environmental planning process initiated & first Environmental Plan produced.
1990-1993	From Environmental Protection to Environmental Stewardship	<ul style="list-style-type: none"> • Environmental Services Department established • Code of Environmental Ethics added to Policy. • Corporate environmental logo launched & a set of informational pamphlets produced about global environmental issues & SysTec's responses to these concerns. • Environmental Management System (EMS) & Due Diligence Program (DDP) introduced. • Environmental Audit process initiated. • Waste Management target surpassed & redefined. • Partnerships established, interest group meetings held, environmental research collaborations initiated. • Collaborative projects developed in response to regulatory requirements. • Earth Day Committee set up & annual Earth Day activities launched.
1994	Environmental Stewardship & Citizenship	<ul style="list-style-type: none"> • Statement of Environmental Principles replaced Code of Environmental Ethics. • Environmental Plan revised as a more strategic document. • EMS & DDP strengthened & independent assessment of environmental activities commissioned. • Environmental priorities established and additional environmental targets set. • Comprehensive training program launched. • Partnership and collaborative activities continued.

